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Lemonniera yulongensis sp. nov. from Yunnan, China

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ABSTRACT—*Lemonniera yulongensis,* isolated from submerged decaying leaves on Yulong Snow Mountain, is described as a new species. The fungus is characterized by monophialidic conidiogenous cells and branched conidia with mainly four septate arms. The new species also extends the distribution of *Lemonniera* into higher elevations than is typical for the genus.

KEY WORDS—aquatic hyphomycetes, fungal diversity, *Helotiales*, taxonomy

Introduction

Lemonniera De Wild. was proposed with *L. aquatica* De Wild. as type species (De Wildeman 1894). The genus is characterized by typically tetraradiate conidia with branches arising more or less simultaneously from a globose primordium and phialidic conidiogenous cells growing at the tip of branched or unbranched conidiophores. Seven species are currently accepted in the genus; Descals & al. (1977) reviewed the morphology and ecology and provided a key to six species, and Sinclair & Morgan-Jones (1979) described a new species isolated from an Alabama stream. Although some *Lemonniera* strains have been collected in terrestrial habitats, most have been isolated from streams, rivers, or ponds (Descals & al. 1977, Sinclair & Morgan-Jones 1979). The cosmopolitan genus has been recorded from Africa, Asia, Europe,

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[#] YU & LV contributed equally to this research.

North America, and Australasia (De Wildeman 1894; Ingold 1942, 1958, 1968; Ranzoni 1953; Tubaki 1958; Petersen 1963; Descals & al. 1977; Sinclair & Morgan-Jones 1979; Seifert & al. 2011).

During a study of aquatic hyphomycetes in Yunnan Province, China, we encountered an unknown fungus that corresponded with the features of *Lemonniera*. We describe it here as a new species, *L. yulongensis*.

Materials & methods

The culture was isolated from decaying leaves submerged in a river on Yulong Snow Mountain, Lijiang county, Yunnan province, in April 2015. The leaves were cut into 2–4 × 2–4 cm fragments and then stretched out on the surface of CMA (20 g cornmeal, 18 g agar, 40 mg streptomycin, 30 mg ampicillin, 1000 ml distilled water) for ten days. Single conidia were captured using a sterilized toothpick while viewing with a CX31 microscope and cultivated on CMA in Petri plates. The cultures were examined after a one-week incubation at 28°C and morphological characters noted. Pure cultures and a permanent slide have been deposited in the Herbarium of the Laboratory for Conservation and Utilization of Bio-resources, Yunnan University, Kunming, P.R. China (YMF; formerly Key Laboratory of Industrial Microbiology and Fermentation Technology of Yunnan).

Taxonomy

Lemonniera yulongensis Z.F. Yu, **sp. nov.** PLATE 1

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Differs from *Lemonniera alabamensis* by its wider, 1(–2)-septate conidial arms.

TYPE: China, Yunnan Province, Lijiang county, Yulong Snow Mountain, 27°06′32″N 100°15′12″E, alt. 3033 m, in a river on submerged leaves of an unidentified dicotyledonous plant, 4 Apr. 2015, Ze-Fen Yu. (**Holotype**, YMF 1.044181 [metabolically inactive permanent slide]); ex-type culture, YMF1.04418).

ETYMOLOGY: Latin, *yulongensis*, referring to the site from which the species was isolated.

COLONIES 20 mm diam. on CMA after 20 days at 25°C. Mycelium hyaline, partly superficial and partly immersed, composed of branched, septate, hyaline hyphae. CONIDIOPHORES macronematous, mononematous, sometimes unbranched or bifurcate or penicillate branched towards the apex, septate, 50–200 × 3–4 µm, straight or flexuous, CONIDIOGENOUS CELLS monophialidic, terminal, integrated or discrete, hyaline, 17.5–27.5 × 6–6.5 µm. CONIDIA hyaline, radial, with a very distinct spherical or globose central cell of 4–6 µm diam, connected by 4 (rarely 3 or 5) arms radially extending from the globose central cell, branches more or less equilateral, subulate, apex rounded, 1(–2)-septate, (17.5–)22–42 × 4.8–6.1(–8.0) µm.

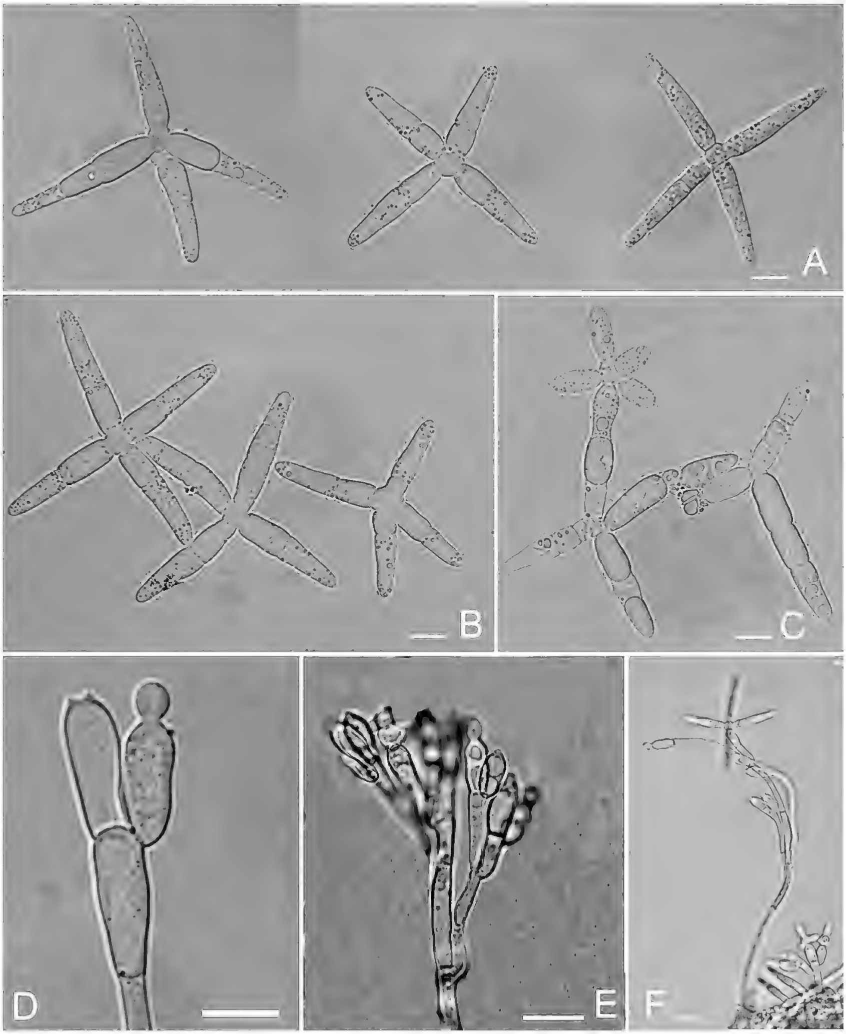

Plate 1. *Lemonniera yulongensis* (holotype, YMF 1.04418): A, B. Conidia; C. Conidia growing from old conidia. D, E. Conidiogenous cells. F. Conidiophores and conidia. Scale bars: A–E = 10 µm; F = 20 µm.

Discussion

Lemonniera yulongensis fits well within the genus *Lemonniera* based on its typically tetraradiate conidia with branches arising from the central body and phialidic conidiogenous cell growing at the tip of main apex or branches of conidiophores.

Lemonniera species have been divided into two groups based on the presence or absence of a central body in the conidia. *Lemonniera alabamensis* R.C. Sinclair & Morgan-Jones, *L. centrosphaera* Marvanová, *L. pseudofloscula* Dyko, and *L. yulongensis* all possess central bodies in their conidia. However, the central conidial body is not as distinct in *L. yulongensis* as those of the other three species. The conidial arms in *L. centrosphaera* and *L. pseudofloscula* are longer than in *L. yulongensis; L. alabamensis,* which produces similarly shaped conidia, is distinguished from *L. yulongensis* by its 2-septate, narrower (2–3 µm diam.) arms (Sinclair & Morgan-Jones 1979).

Five *Lemonniera* species have been reported previously from China: *L. alabamensis* from Beijing (Liu & al. 1992), *L. centrosphaera* from Anhui and *L. cornuta* Ranzoni from Beijing (Yu 1988), *L. filiformis* R.H. Petersen ex Dyko from Anhui (Yu 1988) and Taiwan (Chao 2006), and *L. aquatica* and *L. terrestris* Tubaki from Sichuan (Zhu & Yu 1992). The localities of all five occur at low (970–1100 m) elevations, so the discovery of *L. yulongensis* at higher altitudes area widens the known distribution of the genus.

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